



## Course Overview

Our 24 Week **Data Science Bootcamp** program is designed to deepen your skills and expertise. Each module combines theory with hands-on practice, covering advanced topics and industry-relevant tools. You will gain practical experience through real-world datasets and integrate your learning into a final project, preparing you for success in the data analytics field. This program is ideal for those looking to master data analysis , machine learning and advance their careers.





## Course Modules




### Module 1: Foundations of Data Analysis

 **Duration:** 1 week

 **Objective:** Build a strong foundational understanding of data analytics.

 **Topics:**


- Intro to the data analytics lifecycle: Collection, cleaning, analysis, and reporting.
- Types of data: Structured, semi-structured, and unstructured.
- Overview of tools and technologies: Python, Excel, SQL, Tableau, and Power BI.
- Case studies of real-world data analytics applications.


 **Outcomes:** Students gain clarity on the field and their learning goals.




### Module 2 : Statistics for Aspiring Data Analysts

 **Duration:** 3 weeks

 **Objective:** Equip aspiring data analysts with a solid foundation in statistical concepts, methods, and tools to effectively collect, analyze, and interpret data.

 **Topics:**


- Introduction to statistics
- Data collection and sampling
- Data visualization and descriptive statistics
- Probability and distributions
- Hypothesis testing and inferential statistics
- Correlation and regression analysis


 **Outcomes:** By the end of this course, participants will confidently apply statistical techniques to analyze data, draw insights, and support data-driven decision-making




### Module 3: Introduction to Python Programming

 **Duration:** 3 weeks

 **Objective:** Learn Python fundamentals for data analysis.

 **Topics:**


- Python installation and environment setup (Anaconda, Jupyter Notebook).
- Python basics: Variables, data types, and operators.
- Control structures: Loops (for, while) and conditional statements (if-else).
- Functions: Writing reusable code.
- Working with files: Reading and writing CSV/Excel files.
- Introduction to Python libraries for data: pandas and numpy.


 **Outcomes:** Ability to write Python scripts for basic data handling.




### Module 4: Advanced Excel for Data Analysis

 **Duration:** 2 weeks

 **Objective:** Master Excel for cleaning, analyzing, and visualizing data.

 **Topics:**


- Advanced functions: VLOOKUP, HLOOKUP, and conditional formatting.
- Data cleaning: Removing duplicates, handling blanks, and splitting data.
- PivotTables and PivotCharts for summarization and visualization.
- Power Query for data transformation.


 **Outcomes:** Confidence in handling complex datasets with Excel.




## Module 5: MySQL for Database Management

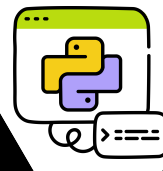
 **Duration:** 2 weeks

 **Objective:** Learn SQL for querying and managing databases.

 **Topics:**


- Relational database fundamentals.
- Writing basic SQL queries: SELECT, WHERE, GROUP BY, ORDER BY.
- Advanced SQL: JOINS, subqueries, and CTEs.
- Database design and normalization.
- Practical exercises with MySQL Workbench.


 **Outcomes:** Ability to manage and query large-scale databases




## Module 6: Python for Data Cleaning and Analysis

 **Duration:** 2 weeks

 **Objective:** Use Python libraries for data cleaning and exploratory analysis.

 **Topics:**


- Pandas: Data manipulation techniques.
- Handling missing data and outliers.
- Data aggregation and grouping, and EDA
- Visualizing data with matplotlib and seaborn.
- Automating repetitive tasks with Python scripts.


 **Outcomes:** Proficiency in cleaning and analyzing data programmatically.




## Module 7: Data Visualization with Power BI

 **Duration:** 3 weeks

 **Objective:** Master Power BI for storytelling with data.

 **Topics:**


- Power BI basics: Connecting to data and creating visuals.
- Designing charts: Bar graphs, scatter plots, maps.
- Creating dashboards and applying filters.
- Storytelling with Power BI dashboards.
- Advanced techniques: Parameters and calculated fields.


 **Outcomes:** Ability to create compelling data dashboards.




## Module 8: Advanced Topics in Data Analytics

 **Duration:** 2 weeks

 **Objective:** Ability to create compelling data dashboards.

 **Topics:**


- Combining tools: Integrating Excel, SQL, and Python workflows.
- Handling large datasets and optimizing performance.
- Data ethics and compliance (e.g., GDPR).
- Predictive analytics basics: Introduction to machine learning.


 **Outcomes:** Understanding of advanced analytics and ethical practices.




## Module 9: Supervised Machine Learning

 **Duration:** 3 weeks

 **Objective:** Master the basics of supervised learning and predictive modeling.

 **Topics:**


- Labeled data, regression, and classification.
- Algorithms: Linear Regression, Logistic Regression, Decision Trees.
- Model evaluation and Python implementation.


 **Outcomes:** Build, evaluate, and apply machine learning models.




## Module 10: Unsupervised Machine Learning

 **Duration:** 1 week

 **Objective:** Understand and apply techniques to analyze unlabeled data.





 **Topics:**

- Clustering (K-Means, Hierarchical) and dimensionality reduction (PCA).
- Applications: Customer segmentation, anomaly detection.

 **Outcomes:** Ability to uncover patterns and insights from raw data.



### Module 9: Capstone Project

- **Duration:** 2 weeks
- **Objective:** Apply all learned skills to a real-world project.
- **Requirements:**
  - Dataset selection, cleaning, and preparation using Python and SQL
  - Visualizing and analyzing data with Tableau and Power BI.
  - Machine Learning Project
- **Deliverables:**
  - Interactive dashboards.
  - A presentation showcasing insights and recommendations.



## Assessment and Certification



**Weekly Assessments**  
Quizzes, assignments, and mini-projects.



**Mid-Course Evaluation**  
Hands-on assessments in Python and SQL



**Final Evaluation**  
Capstone project grading (analysis, visualization, presentation).



**Certification**  
IoA-Endorsed Certificate or equivalent upon successful completion.

This 24-week program ensures a gradual build-up of skills, with ample time for practice and mastery.



## Tools For Data Analyst



## Recognized and Accredited by

